

Serial No.: 10/801,307

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IN THE DRAWINGS

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Amendments To Drawing Figures

Fig. 17C has been added to illustrate the valve in a default neutral state where both valve seats of the three-way valve are open, as requested in the Office Action. A new drawing sheet is attached. The drawing is a schematic depiction of what is described in the specification. No new matter is added.

Serial No.: 10/801,307

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REMARKS

Claim Status

The claims in this application are claims 1-20.

Support for two valve seats can be found in the original disclosure at paragraph [0025].

Support for two air pressure diaphragms can be found in the original disclosure at paragraphs [0029], [0031] and [0032]. No new matter has been introduced.

Objections to the Drawings

The Notice of Draftsperson's Patent Drawing Review, which was attached to the July 10, 2006 Office Action is noted. Formal drawings will be submitted upon receipt of the examiner's approval of the proposed drawing changes.

Fig. 1 has been objected to as allegedly needing to be labeled as "prior art." This objection is now moot in view of the above amendment of paragraph [0012], which amendment is supported by the paragraph [0024] of the originally filed specification. For example, it is noted that the illustration of FIG 1 includes a dual pneumatic actuated three way valve 70, which is clearly part of the present invention. Moreover, paragraph [0024] refers to Fig. 1 as "an embodiment" and references Fig. 9, which is also designated as being in accordance with an embodiment of the invention (see paragraph [0018]). Paragraph [0027] merely says that "[s]pray machines *like that* of FIG 1 are commonly subject to daily disassembly," (emphasis supplied), which is not a statement that the identical apparatus of FIG 1 is being referenced to, much less that the apparatus of FIG 1 is "well known prior art".

The drawings are also objected to under 37 CFR 1.83(a) for not illustrating various features of the claims, specifically the first position, second position and default neutral position. Withdrawal of this rejection is requested. As noted above, Fig. 17C has been added to illustrate the valve in a default neutral state where both valve seats of the three-way valve are open, as requested in the Office Action. The first and second positions are shown in Figs. 17A and 17B.

Serial No.: 10/801,307

As noted in the Office Action, 37 CFR 1.83(a) states that the drawing in a nonprovisional application must show every feature of the invention specified in the claims. This has been done in FIG 17A, FIG 17B and new FIG 17C. The Examiner urges that "schematic drawings cannot represent the open and closed positions of the valve when only details of relative positions of the internal parts and features of the valve can clearly show the respective positions." Applicant respectfully disagrees. 37 CFR 1.83(a) actually states that features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, *should be* illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box). In this regard, it is respectfully submitted that one of ordinary skill in the art would readily understand the three possible positions of the valve that is described and claimed herein. For example, as discussed in more detail below, one of ordinary skill in the art would readily understand that the valve can be pneumatically operated to open the first valve seat while closing the second valve seat, can be pneumatically operated to close the first valve seat while opening the second valve seat, or can occupy a central position where the first and second valve seats are open (the default neutral position) when supply pressure operating the valve is removed.

The objection to FIG 9 is not understood. Paragraph [0025], as amended in response to the prior Office Action of December 16, 2005, refers to numerals 80a and 80b. Clarification is respectfully requested.

The objection to FIG 11 is believed to be moot in view of the above amendment to paragraph [0032].

The objections to FIGS 12-16 are believed to be moot in view of the above amendment to paragraph [0042].

With respect to the objection to FIGS 17A and 17B, the numeral 17 refers to the jar, which acts as a reservoir for the pipette needle 11. See the amendment to paragraph [0024] in the response

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OCT 10 2006

Serial No.: 10/801,307

to the Office Action of December 16, 2005. For this reason, it is believed that FIGS 17A and 17B are properly numbered.

In view of the above, reconsideration and withdrawal of the objection to the drawings is requested.

Rejection under 35 USC § 112, first paragraph

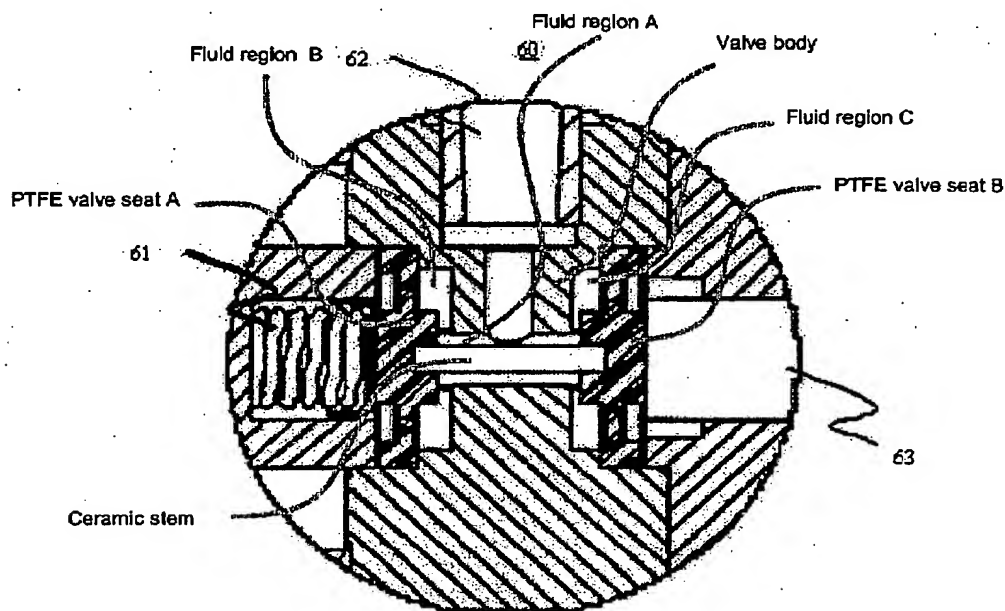
Claims 2, 4, 11 and 19 are rejected under 35 USC § 112, first paragraph as allegedly failing to comply with the enablement requirement. In particular, the Examiner is concerned that one of ordinary skill in the art would not understand how the valve returns to its neutral state. This rejection is respectfully traversed.

As noted in paragraph [0028], the exemplary embodiment 70 of the three-way valve illustrated in FIG 9 involves a modification of a known Takasago three-way valve, which is shown in varying views in FIGS 2-8. As described in paragraph [0002] of the Background, and as perhaps best seen in FIG 5 (presented below with annotations), the existing three-way valve is a pneumatically activated valve (via pneumatically activated plunger 63) with a spring return 61. The existing valve contains an assembly that includes two PTFE valve seats mechanically interlocked with a small ceramic stem ("the assembly"). As can be seen from FIG 5, the PTFE valve seats are fixed such that they can't move horizontally without deformation. Moreover, the PTFE valve seats are elastic and in the absence of any horizontal force (i.e., pneumatic force or spring force), would be centered with respect to the valve body (which is shown in right-hand downward cross-hatching) such that both valve seats are open. However, when the plunger 63 of FIG 5 is pneumatically activated, it drives the assembly to the left. This overcomes the force being exerted by the spring return 61 and allows the PTFE valve seat A to pull away from the valve body, resulting in fluid communication between fluid region A (which is connected to a first common port) and fluid region B (which is connected to a second port). This also pushes the PTFE valve seat B against the valve body, precluding fluid communication between fluid region A and fluid region C (which is connected to a third port). On the other hand, when the pneumatic pressure is removed, the assembly is driven to the right by the spring return 61, forcing the PTFE valve seat A against the valve body, and preventing fluid communication between fluid region A and fluid region B. The PTFE valve seat B, on the other

Serial No.: 10/801,307

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hand, is pulled way from the valve body, allowing fluid communication between fluid region A and fluid region C. Thus, due to the presence of the spring return in the valve of FIG 5, there is *always* an actuating force, even when the supply pressure operating the valve is removed (e.g., when the valve is not in use). Consequently, there is never a situation in which the assembly is not being urged to the left or right, and thus the assembly is never allowed to become centered with respect to the valve body (due to the elastic rebound of the PTFE material) such that both valve seats are open (i.e., at its "equilibrium" position). Moreover, when the supply pressure operating the valve is removed from the valve of FIG 5, the PTFE valve seat A is forced against the valve body by the spring return, allowing the valve to be glued shut.

**Fig. 5**

In the present invention, on the other hand, both valve seats are pneumatically driven and there is no spring return. Thus, when the pneumatic force is removed from the valve (e.g., when the valve is not in use) the assembly is neither forced to the left nor to the right, allowing the assembly to return to its centered "equilibrium" position wherein both valve seats are open. This completely opens the valve (i.e., establishing fluid communication between fluid region A and fluid region B at

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OCT 10 2006

Serial No.: 10/801,307

the same time as establishing fluid communication between fluid region A and fluid region C). More importantly, when the spray coat machine of the present invention is not in use, neither valve seat is held closed, which eliminates the possibility of the valve becoming glued shut. See paragraph [0033].

One of ordinary skill in the art, would readily understand that this is the case upon review of the as-filed specification, claims and drawings.

Moreover, to make the claimed invention, one of ordinary skill in the art would merely have to make the changes to the known three-way Takasago valve as described in the present specification.

Reconsideration and withdrawal of the rejection of claims 2, 4, 11 and 19 under 35 USC § 112, first paragraph, are requested.

Rejection under 35 USC § 112, second paragraph

The rejection under 35 USC § 112, second paragraph is believed to be moot in view of the above amendment to claims 2, 11 and 19.

Rejection under 35 USC § 103—Claims 1-7 and 10-20

Claims 1-7 and 10-20 are rejected under 35 U.S.C. 103(a). This rejection and its accompanying remarks are respectfully traversed.

According to the Office Action, it would have been obvious to substitute the valve in Kintner (US 3,426,799) for the Takasago spring valve of Figs. 2-7 in order to make the apparatus automated and more reliable. This rejection is respectfully traversed.

First the three-way valves of Kintner are no more automated than the Takasago valve, because each is fully automated. In addition, one of ordinary skill in the art would realize that a spring driven valve is simpler in operation than a double-pneumatic valve (the valve only needs to be operated in one direction--the spring automatically operates the valve in the return direction), and thus more reliable from a mechanical standpoint.

In this regard, it is true that present inventor discovered that the spring actuated valve encountered reliability issues when spraying coating solutions. However, this is not taught in the cited art, but rather was discovered by the inventor. Moreover, even if one of skill in the art

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Serial No.: 10/801,307

OCT 10 2006

recognized the problem that was recognized by the inventor, it would not be obvious to solve the problem as claimed in view of Kintner.

Furthermore, all presently pending claims require a dual pneumatic actuated three-way valve comprising two valve seats. Kintner, on the other hand, does not teach or suggest such valves, but rather teaches piston-operated valves. Indeed, Kintner dismisses valves having seats, diaphragms, etc., as unreliable. Col. 1, lines 12-15.

With respect to claims 2 and 11, even assuming for the sake of argument that one of the three-way valves in Kintner did comprise valve seats *and* that the valve of Kintner could achieve a neutral position, this position is not the *default* position for the valve of Kintner when the pressure is removed. Rather, the valve of Kintner would remain at its last-operated position when the pressure is removed, as there is no biasing force to return it to such a position (as noted above, this position is achieved by the elastic rebound of the valve seats in the present invention). Furthermore, even if the Kintner valve had a mechanism to allow for a default neutral position, it would become gummed up (glued) because the piston and fluid walls are in still in contact.

Reconsideration and withdrawal of the claim rejection under 35 U.S.C. § 103 are therefore requested.

Rejection under 35 USC § 103 – Claims 8 and 9

Claims 8 and 9 have been rejected as above and further in view of Chemical Plastics Ltd. (2001) (Plastics). This rejection and its accompanying remarks are respectfully traversed.

First, claims 8 and 9 depend from claim 5, and the Plastics reference does not make up for the above deficiencies of the cited art vis-à-vis claim 5.

Claim 8 requires stainless steel inserts. Plastics discloses steel inserts. However, in view of the foregoing remarks, claim 8 remains unobvious in its fundamental limitations.

Claim 9 requires a "stainless steel body," which Plastics does not disclose and actually teaches away from. In re Baird, 16 F.3d 380, 29 U.S.P.Q. 2d 1550 (Fed. Cir. 1994), also see MPEP 2141.02, final paragraph, and the cases cited therein. The article throughout stresses the advantages of a plastic valve body. See especially the first of the "Features" listed in the publication. Thus there is an additional reason to treat claim 9 separately and find it not to be obvious over the references.

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CENTRAL FAX CENTER

OCT 10 2006

Serial No.: 10/801,307

Reconsideration and withdrawal of the claim rejection of claims 8 and 9 under 35 U.S.C. § 103 are therefore requested.

Rejection under 35 USC § 103 – Claims 1-7, 11, and 14-20

Claims 1-7, 11, and 14-20 have been rejected under 35 USC §103(a) as obvious over Liston (US 3,817,425) in view of Kintner. This rejection and its accompanying remarks are respectfully traversed.

For example, as noted above, all presently pending claims require a dual pneumatic actuated three-way valve comprising two valve seats. Kintner, on the other hand, does not teach or suggest such valves, but rather teaches piston-operated valves. Indeed, Kintner dismisses valves having seats, diaphragms, etc. as unreliable. Col. 1, lines 12-15.

With respect to claims 2 and 11, even assuming for the sake of argument that one of the three-way valves in Kintner did comprise valve seats *and* could achieve a neutral position, this position is not the default position for the valve of Kintner when the pressure is removed. Rather, the valve of Kintner would remain at its last-operated position when the pressure is removed, as there is no biasing force to return it to such a position.

Reconsideration and withdrawal of the claim rejection of claims 1-7, 11, and 14-20 under 35 U.S.C. § 103 are therefore requested.

Conclusion

In light of the foregoing amendments and remarks it is respectfully considered that the rejections of record have been obviated, and allowance of this application is respectfully requested.

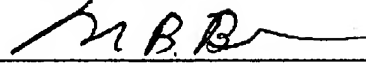
Fees

The Examiner is authorized to charge any fees that may be due to the undersigned attorney's PTO Deposit Account #50-1047.

Serial No.: 10/801,307

Respectfully submitted,

By:



Attorney for Applicant
Mayer & Williams, PC
251 North Avenue West, 2nd Floor
Westfield, NJ 07090

David B. Bonham
Reg. No. 34,297

Tel.: 703-433-0510

Fax: 703-433-2362

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